AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (Canceled)

Claim 2. (Currently amended) A load sensor assembly, comprising:

a substantially square plate;

a hole in each of four corners of said plate for receiving a fastener therethrough;

a first axis defined by a first pair of diagonally opposed ones of said holes;

a second axis defined by a second pair of diagonally opposed ones of said holes;

a strain gauge secured to said plate, wherein said strain gauge comprises at least two uniaxial strain elements, each of said two uniaxial strain elements having an axis of sensitivity, and wherein said two uniaxial strain elements are oriented within said strain gauge such that their respective axes of sensitivity are perpendicular to one another.

Claim 3. (Original) The load sensor of claim 2 wherein said strain gauge is secured to said plate such that one of said axes of sensitivity is parallel to said first axis and the other of said axes of sensitivity is parallel to said second axis.

Claim 4. (Original) The load sensor of claim 3 wherein said strain gauge is mounted on said plate so as to be substantially centered thereon.

Claim 5. (Original) The load sensor of claim 4 wherein said strain gauge comprises four uniaxial strain elements in a square pattern on said strain gauge, a first pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said first axis and a second pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said second axis.

Claim 6. (Original) The assembly of claim 5 further comprising:

a plurality of standoffs mounted on said plate, said standoffs not lying on either said first or second axes;

a printed circuit board mounted on said standoffs and overlaying said strain gauge;

said printed circuit board containing traces defining a Wheatstone full bridge configuration including said four elements of said strain gauge, and lead-throughs for establishing electrical connection between said traces and a plurality of leads emanating from said strain gauge;

said leads extending from said strain gauge through said lead-throughs;

said plate having substantially straight sides; and,

a cover mounted on said plate to cover said standoffs, printed circuit board and strain gauge, said cover being oriented such that its corners lie along lines bisecting the straight sides of said plate.

Claim 7. (Original) The assembly of claim 3 further comprising a cover having a square cross section is mounted to said plate to overlie said strain gauge, and wherein said cover is mounted such that each of its sides is perpendicular to either said first or second axis.

Claim 8. (Original) The assembly of claim 6 wherein said cover has a square cross section and is mounted such that each of its sides is perpendicular to either said first or second axis.

Claims 9 to 17 (Canceled)

Claims 18 and 19 (Withdrawn)

Claims 20 to 23 (Canceled)

Claim 24 (Currently amended) A method of detecting strain in a structure comprising mounting an assembly on said structure, said assembly comprising:

a substantially square plate;

a hole in each of four corners of said plate for receiving a fastener therethrough;

a first axis defined by a first pair of diagonally opposed ones of said holes;

a second axis defined by a second pair of diagonally opposed ones of said holes;

a strain gauge secured to said plate, said strain gauge comprising four uniaxial strain elements in a square pattern on said strain gauge, a first pair of diagonally

opposed ones of said elements having axes of sensitivity oriented parallel to said first axis and a second pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said second axis;

said assembly being mounted by inserting fastening elements through said holes such that said first axis lies along a principal strain axis along which strain is to be measured.

Claim 25 (Currently amended) A method of detecting strain in a structure comprising mounting an assembly on said structure, said assembly comprising

a substantially square plate;

a hole in each of four corners of said plate for receiving a fastener therethrough;

a first axis defined by a first pair of diagonally opposed ones of said holes;

a second axis defined by a second pair of diagonally opposed ones of said holes;

a strain gauge secured to said plate, said strain gauge comprising four uniaxial strain elements in a square pattern on said strain gauge, a first pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said first axis and a second pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said second axis;

a plurality of standoffs mounted on said plate, said standoffs not lying on either said first or second axes;

a printed circuit board mounted on said standoffs and overlaying said strain gauge;

said printed circuit board containing traces defining a Wheatstone full bridge configuration including said four elements of said strain gauge, and lead-throughs for establishing electrical connection between said traces and a plurality of leads emanating from said strain gauge;

said leads extending from said strain gauge through said lead-throughs;

said plate having substantially straight sides; and,

a cover mounted on said plate to cover said standoffs, printed circuit board and strain gauge, said cover being oriented such that its corners lie along lines bisecting the straight sides of said plate;

said assembly being mounted by inserting fastening elements through said holes such that said first axis lies along a principal strain axis along which strain is to be measured.

Claim 26 (Canceled)

Claim 27 (Previously presented) A method of sensing the load in a container, said container having a structural element that is subject to a strain along a principal strain axis when the container is loaded comprising mounting a load sensor assembly on said structural element, said assembly comprising:

a substantially square plate;

a hole in each of four corners of said plate for receiving a fastener therethrough;

a first axis defined by a first pair of diagonally opposed ones of said holes;

a second axis defined by a second pair of diagonally opposed ones of said holes;

a strain gauge secured to said plate, said strain gauge comprising four uniaxial strain elements in a square pattern on said strain gauge, a first pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said first axis and a second pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said second axis;

said assembly being mounted on said structural element by inserting fastening elements through said holes such that said first axis lies along said principal strain axis.

Claim 28 (Previously presented) A method of sensing the load in a container, said container having a structural element that is subject to a strain along a principal strain axis when the container is loaded comprising mounting a load sensor assembly on said structural element, said assembly comprising:

a substantially square plate;

a hole in each of four corners of said plate for receiving a fastener therethrough;

a first axis defined by a first pair of diagonally opposed ones of said holes;

a second axis defined by a second pair of diagonally opposed ones of said holes;

a strain gauge secured to said plate, said strain gauge comprising four uniaxial strain elements in a square pattern on said strain gauge, a first pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said first axis and a second pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said second axis;

a plurality of standoffs mounted on said plate, said standoffs not lying on either said first or second axes;

a printed circuit board mounted on said standoffs and overlaying said strain gauge;

said printed circuit board containing traces defining a Wheatstone full bridge configuration including said four elements of said strain gauge, and lead-throughs for establishing electrical connection between said traces and a plurality of leads emanating from said strain gauge;

said leads extending from said strain gauge through said lead-throughs;

said plate having substantially straight sides; and,

a cover mounted on said plate to cover said standoffs, printed circuit board and strain gauge, said cover being oriented such that its corners lie along lines bisecting the straight sides of said plate;

said assembly being mounted on said structural element by inserting fastening elements through said holes such that said first axis lies along said principal strain axis.

Claims 29 to 34 (Withdrawn)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Title:	LOAD SENSOR
Serial No.:	10/071,504
Filing Date:	February 11, 2002
First Named Inventor:	Christensen
Group Art Unit:	2855
Examiner:	Octavia L. Davis
Attorney Docket No.:	069P2

To: Commissioner for Patents
United States Patent and Trademark Office

Dear Examiner Davis:

RESPONSE TO OFFICE ACTION

In response to the Office Action dated October 27, 2003, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this letter.

Remarks/Arguments begin on page 9 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (Canceled)

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a substantially square plate;

a hole in each of four corners of said plate for receiving a fastener therethrough;

a first axis defined by a first pair of diagonally opposed ones of said holes;

a second axis defined by a second pair of diagonally opposed ones of said holes;

a strain gauge secured to said plate, wherein said strain gauge comprises at least two uniaxial strain elements, each of said two uniaxial strain elements having an axis of sensitivity, and wherein said two uniaxial strain elements are oriented within said strain gauge such that their respective axes of sensitivity are perpendicular to one another.

Claim 3. (Original) The load sensor of claim 2 wherein said strain gauge is secured to said plate such that one of said axes of sensitivity is parallel to said first axis and the other of said axes of sensitivity is parallel to said second axis.

Claim 4. (Original) The load sensor of claim 3 wherein said strain gauge is mounted on said plate so as to be substantially centered thereon.

Claim 5. (Original) The load sensor of claim 4 wherein said strain gauge comprises four uniaxial strain elements in a square pattern on said strain gauge, a first pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said first axis and a second pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said second axis.

Claim 6. (Original) The assembly of claim 5 further comprising:

a plurality of standoffs mounted on said plate, said standoffs not lying on either said first or second axes;

a printed circuit board mounted on said standoffs and overlaying said strain gauge;

said printed circuit board containing traces defining a Wheatstone full bridge configuration including said four elements of said strain gauge, and lead-throughs for establishing electrical connection between said traces and a plurality of leads emanating from said strain gauge;

said leads extending from said strain gauge through said lead-throughs;

said plate having substantially straight sides; and,

a cover mounted on said plate to cover said standoffs, printed circuit board and strain gauge, said cover being oriented such that its corners lie along lines bisecting the straight sides of said plate.

Claim 7. (Original) The assembly of claim 3 further comprising a cover having a square cross section is mounted to said plate to overlie said strain gauge, and wherein said cover is mounted such that each of its sides is perpendicular to either said first or second axis.

Claim 8. (Original) The assembly of claim 6 wherein said cover has a square cross section and is mounted such that each of its sides is perpendicular to either said first or second axis.

Claims 9 to 17 (Canceled)

Claims 18 and 19 (Withdrawn)

Claims 20 to 23 (Canceled)

Claim 24 (Currently amended) A method of detecting strain in a structure comprising mounting an assembly on said structure, said assembly comprising:

a substantially square plate;

a hole in each of four corners of said plate for receiving a fastener therethrough;

a first axis defined by a first pair of diagonally opposed ones of said holes;

a second axis defined by a second pair of diagonally opposed ones of said holes;

a strain gauge secured to said plate, said strain gauge comprising four uniaxial strain elements in a square pattern on said strain gauge, a first pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said first axis and a second pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said second axis;

said assembly being mounted by inserting fastening elements through said holes such that said first axis lies along a principal strain axis along which strain is to be measured.

Claim 25 (Currently amended) A method of detecting strain in a structure comprising mounting an assembly on said structure, said assembly comprising

a substantially square plate;

a hole in each of four corners of said plate for receiving a fastener therethrough;

a first axis defined by a first pair of diagonally opposed ones of said holes;

a second axis defined by a second pair of diagonally opposed ones of said holes;

a strain gauge secured to said plate, said strain gauge comprising four uniaxial strain elements in a square pattern on said strain gauge, a first pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said first axis and a second pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said second axis;

a plurality of standoffs mounted on said plate, said standoffs not lying on either said first or second axes;

a printed circuit board mounted on said standoffs and overlaying said strain gauge;

said printed circuit board containing traces defining a Wheatstone full bridge configuration including said four elements of said strain gauge, and lead-throughs for establishing electrical connection between said traces and a plurality of leads emanating from said strain gauge;

said leads extending from said strain gauge through said lead-throughs;

said plate having substantially straight sides; and,

a cover mounted on said plate to cover said standoffs, printed circuit board and strain gauge, said cover being oriented such that its corners lie along lines bisecting the straight sides of said plate;

said assembly being mounted by inserting fastening elements through said holes such that said first axis lies along a principal strain axis along which strain is to be measured.

Claim 26 (Canceled)

Claim 27 (Previously presented) A method of sensing the load in a container, said container having a structural element that is subject to a strain along a principal

strain axis when the container is loaded comprising mounting a load sensor assembly on said structural element, said assembly comprising:

a substantially square plate;

a hole in each of four corners of said plate for receiving a fastener therethrough;

a first axis defined by a first pair of diagonally opposed ones of said holes;

a second axis defined by a second pair of diagonally opposed ones of said holes;

a strain gauge secured to said plate, said strain gauge comprising four uniaxial strain elements in a square pattern on said strain gauge, a first pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said first axis and a second pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said second axis;

said assembly being mounted on said structural element by inserting fastening elements through said holes such that said first axis lies along said principal strain axis.

Claim 28 (Previously presented) A method of sensing the load in a container, said container having a structural element that is subject to a strain along a principal strain axis when the container is loaded comprising mounting a load sensor assembly on said structural element, said assembly comprising:

a substantially square plate;

a hole in each of four corners of said plate for receiving a fastener therethrough;

a first axis defined by a first pair of diagonally opposed ones of said holes;

a second axis defined by a second pair of diagonally opposed ones of said holes;

a strain gauge secured to said plate, said strain gauge comprising four uniaxial strain elements in a square pattern on said strain gauge, a first pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said first axis and a second pair of diagonally opposed ones of said elements having axes of sensitivity oriented parallel to said second axis;

a plurality of standoffs mounted on said plate, said standoffs not lying on either said first or second axes;

a printed circuit board mounted on said standoffs and overlaying said strain gauge;

said printed circuit board containing traces defining a Wheatstone full bridge configuration including said four elements of said strain gauge, and lead-throughs for establishing electrical connection between said traces and a plurality of leads emanating from said strain gauge;

said leads extending from said strain gauge through said lead-throughs;

said plate having substantially straight sides; and,

a cover mounted on said plate to cover said standoffs, printed circuit board and strain gauge, said cover being oriented such that its corners lie along lines bisecting the straight sides of said plate;

said assembly being mounted on said structural element by inserting fastening elements through said holes such that said first axis lies along said principal strain axis.

Claims 29 to 34 (Withdrawn)